

Mechanical Arm and Counterbalance Assembly

ABSTRACT

5 A mechanical assembly includes an arm and an extension link that rotate about a pivot
point, a yoke, and a force generating device. The yoke includes a first slot in which a pin of the
link resides. The yoke translates in a plane responsive to rotation of the counterbalance
extension link pin about the pivot point. The force generating device is connected between the
counterbalance extension link pin and a fixed point on the yoke to exert a force on the
10 counterbalance extension link pin. The orientation and magnitude of the force produced by the
force generating device remains constant as the yoke translates. The force generating device and
extension link produce a torque that is equal and opposing to the torque produced by the force of
gravity acting on the arm so that the arm is in static equilibrium. The static equilibrium
condition is independent of the rotational position of the arm.